

Competence in
Optical 3D Measuring





The QTSculptor System

QTSculptor is a complete system for the accurate 3D measuring of real world objects. The basic components are the multi-purpose 3D scanner and the high performance QTSculptor software.

The 3D scanners of the PT-M series are famous for their adjustability to varying object sizes. The functionality of these scanners can be expanded with macro equipment and a color camera.

The viSense2 scanner, with its very high speed and an optimized acquisition method, is specialized for capturing faces in 3D and color.

viSense vario is our entry level scanner for 3D measuring tasks. The resolution of 4 MPixel for 3D and color, resulting in 50 μ m depth resolution, provide a very high level of detail.

The QTSculptor software stands out due to the ability to handle very large projects with large numbers of scans. All scans are robustly combined to a common coordinate system even without using object markers. The result is a watertight triangular mesh.



QTSculptor Components



3D Face Scanner viSense2

- Capturing of geometry and color
- Minimum capturing time: 0.25 s
- Controlling of external photoflash devices
- Linking of multiple viSense2 scanning devices for simultaneous use



3D Scanner viSense vario

- Capturing of geometry and color with 4 MPixel Resolution
- Speed-Mode (reduced resolution) for very fast data acquisition
- Controlling of external photoflash devices
- Linking of multiple viSense vario scanning devices for simultaneous use



3D Scanner PT-M

- Resolution: optional 4 MPixel / 5 MPixel
- Adjustable measuring area for small to large objects

Macro Extension for the PT-M 3D scanner series

- Adjustable measuring area for very high details
- Maximum Depth resolution for PT-M4 at 62x62 mm: 6 μ m
- Maximum Depth resolution for PT-M5 at 47x39 mm: 4 μ m



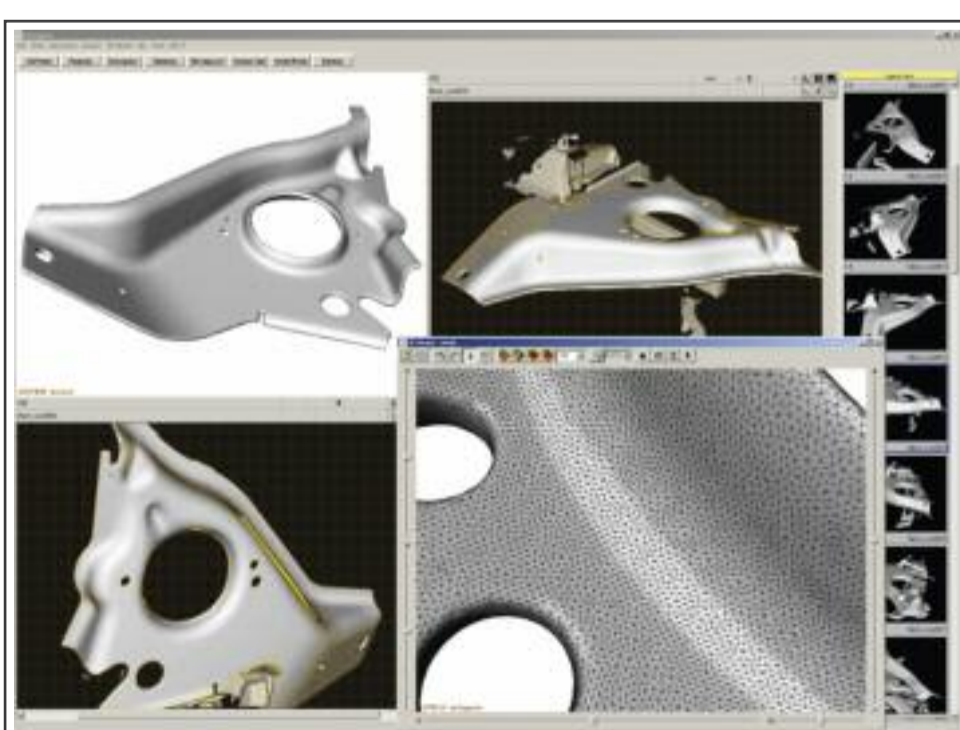
Color Camera Extension for the PT-M 3D scanner series

- Resolution: optional 4 MPixel / 5 MPixel
- Controlling of external photoflash devices



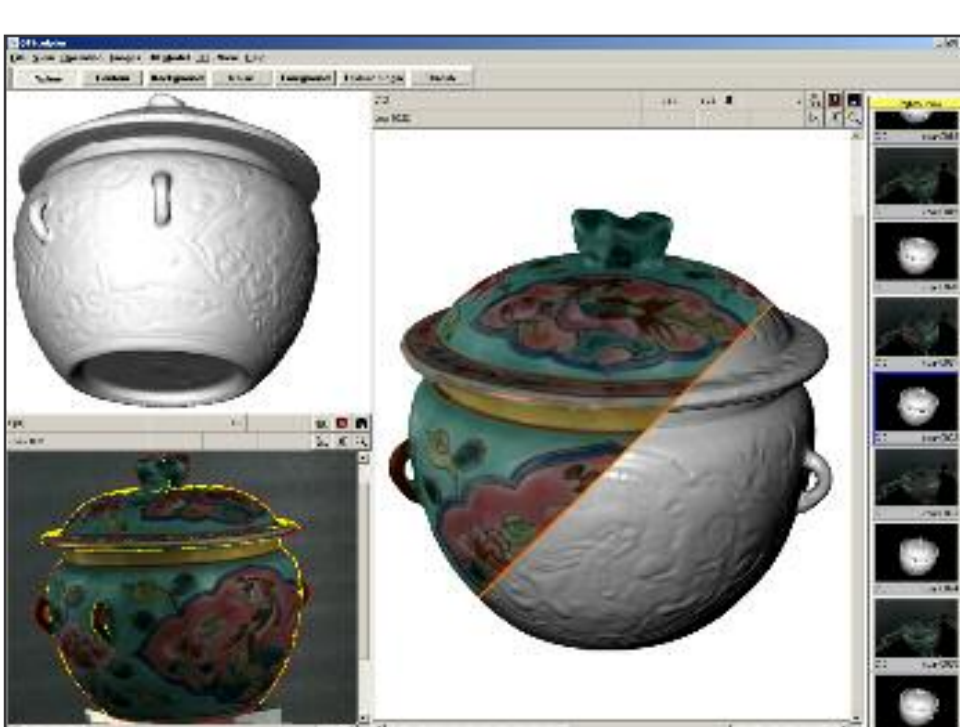
Rotary Device PT-R200

- Automatic combination of multiple scans
- Program controlled sequences
- Maximum payload: 200 kg



Base Software Module

- Controlling and calibrating of the sensor head
- Registration of 3D scans and computation of watertight triangular meshes



Texturing Software Module

- Texturing of triangular meshes with digital photos
- Automatic texturing with the Color Camera Extension (see below)

viSense2 Face Scanner

The viSense2 captures geometry and color in a fraction of a second. It can be used both as a single device, but also linked with several other viSense2 scanners. The synchronization between the scanning devices is done on the hardware side and is therefore very robust. The data is automatically combined in the high performance viSense module of the QTSculptor software. The viSense2 can control an external photoflash to minimize shadows in the color data.

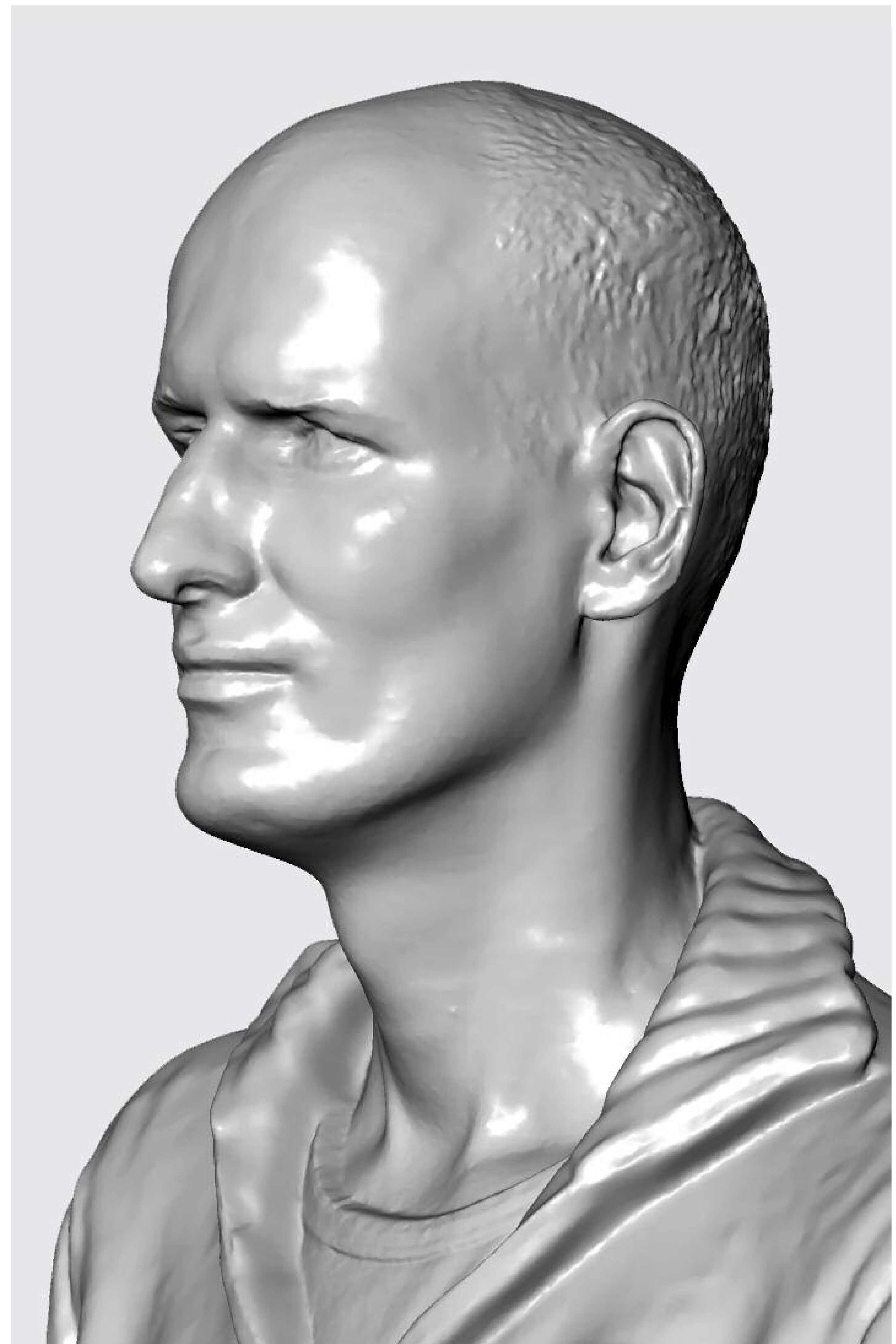
Originally developed within the framework of the European project "3D Face", the face scanner viSense now also shows its strengths in medical engineering, art, film, design, reproduction and many other fields of use.



Synchronized multi-scanner setup (optional)



Triangulated 3D model with texture information



High detailed volume models are captured in very short time

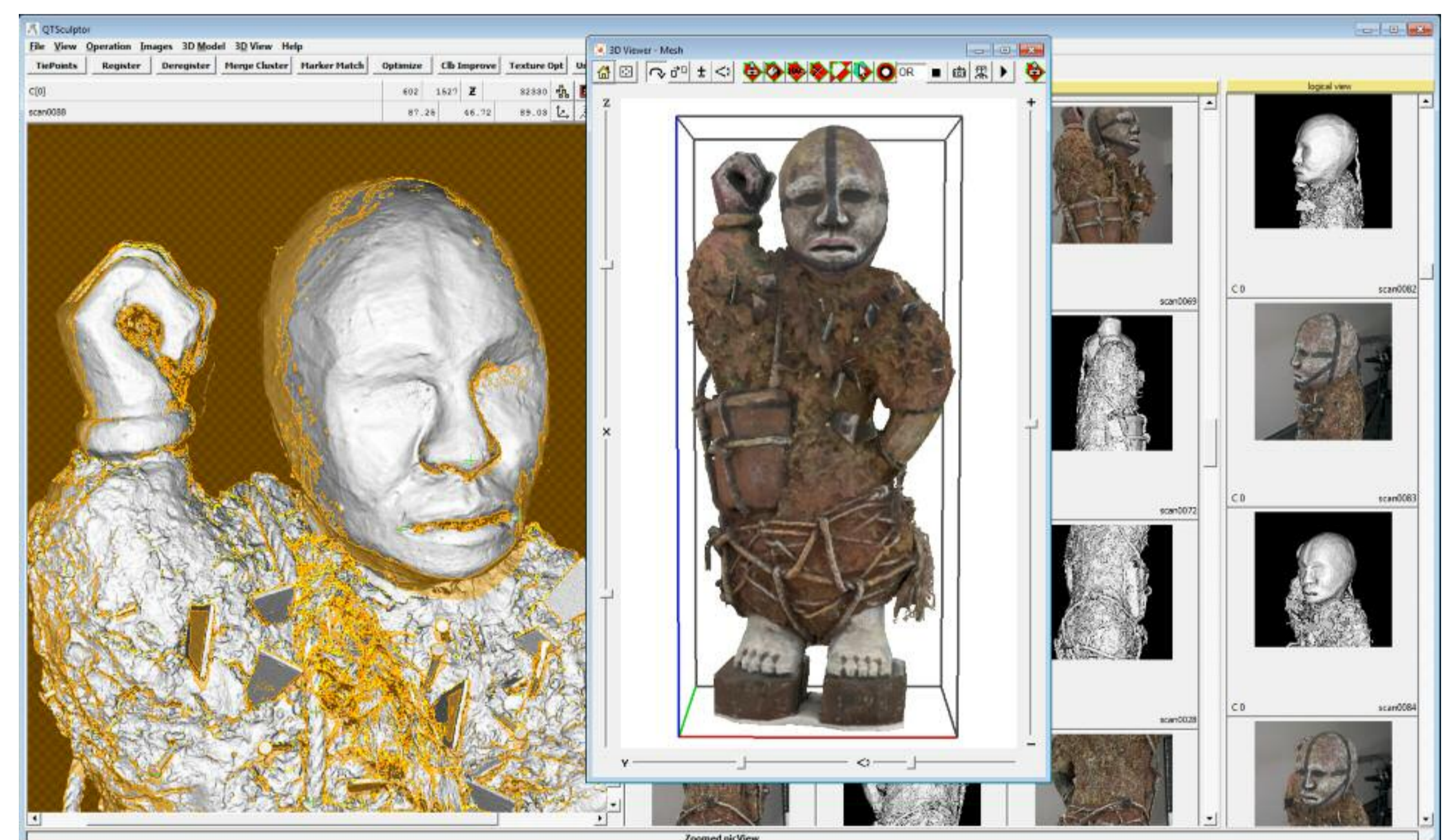
Resolution 3D [Pixel]: 782x582
Resolution 2D / Color [Pixel]: 1624x1234

Measuring Area [mm] : 350x260
Scanning Speed 3D [s]: 0.25

3D Scanner **viSense vario**

The viSense vario is an all-round scanning device with a fixed measuring area that can be used in three different modes: Precision, Speed und Snapshot mode.

- Operational as single unit or multi-scanner-cluster
- Control of external flash units for optimal photo quality
- Automatic merging of simultaneously scanned data
- Controlled over Gigabit Ethernet
- Use with or without rotary device PT-R200



Processing of scandata in the QTSculptor Software

Precision mode

High-precision measurement and documentation of high detailed, static objects.

- 4 Megapixel 3D + Color
- Minimum acquisition time: 1 second

Speed mode

3D capturing of faces and body parts, also for the fast digitization of objects for presentation purpose.

- XGA (1024x768) in 3D + 4 MPx Color
- Minimum acquisition time: 1/4 second

Snapshot mode

Particularly suitable for snapshots of facial expressions or slow moving objects.

- Acquisition time: 1/60 second

3D Scanner PT-M

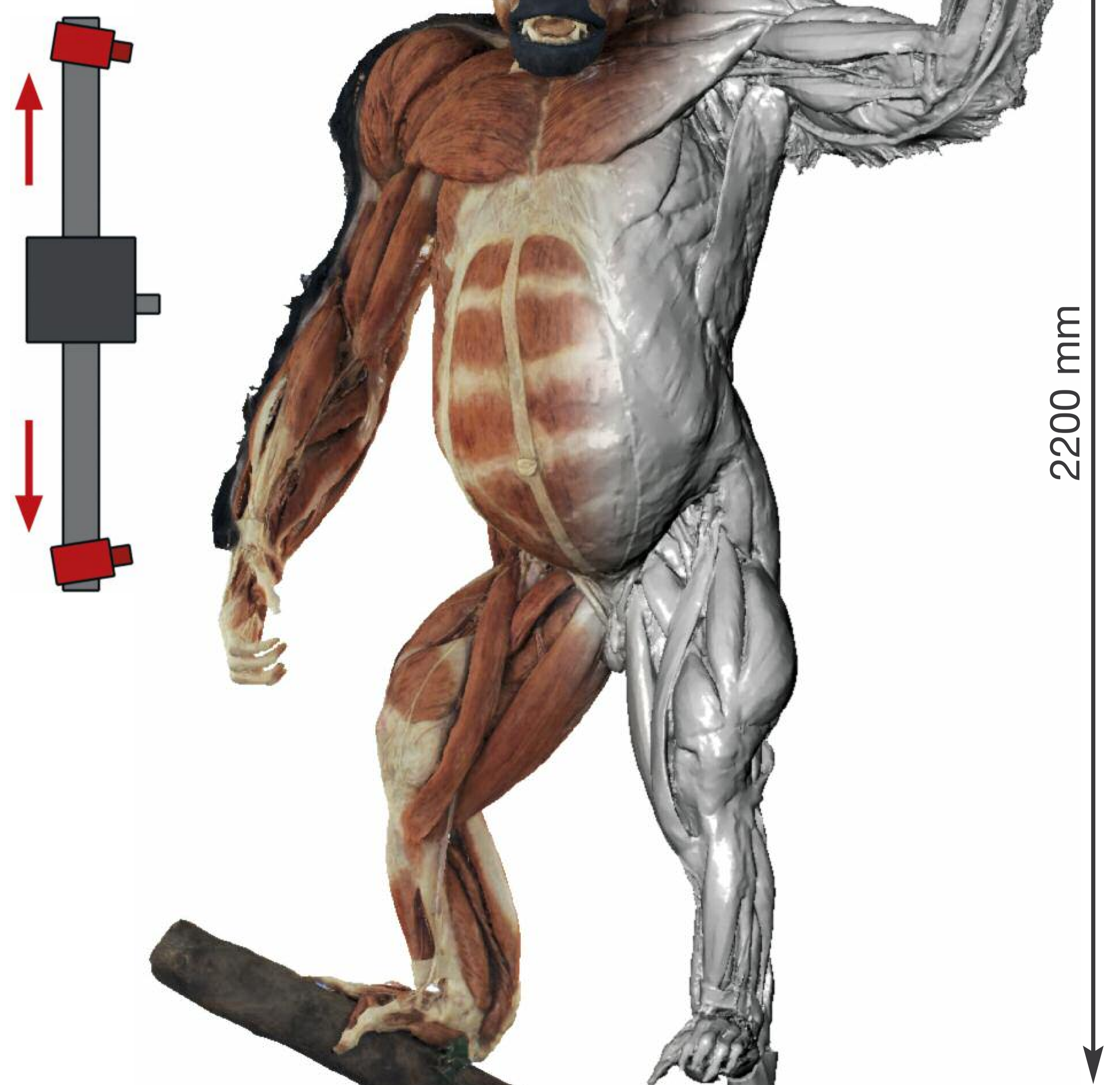
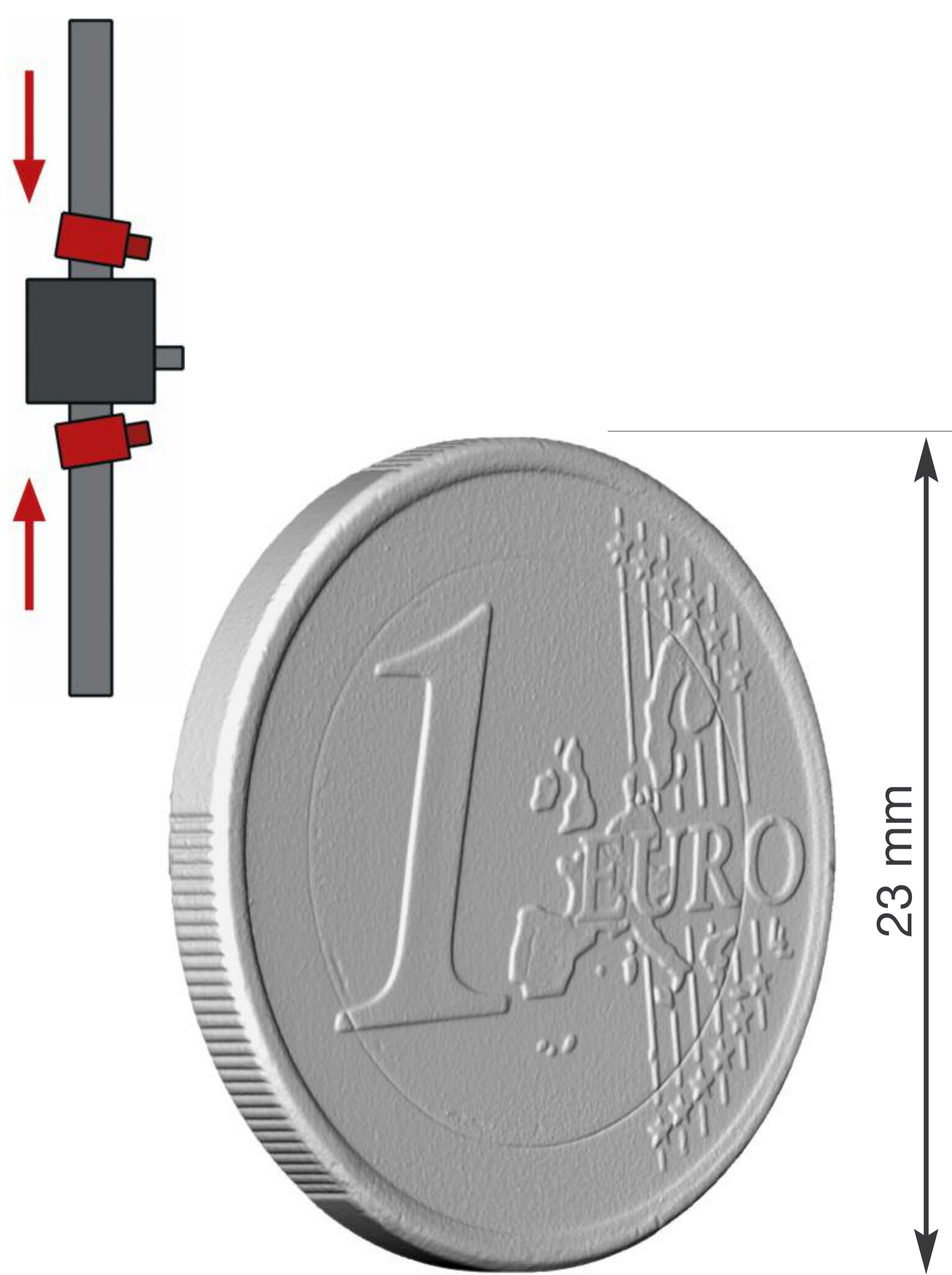
The PT-M scanner series consists of a stereo scanner head with two cameras and a projector which performs a moving stripe-projection.

The functionality of the scanner can be expanded with a color camera and high accurate calibration equipment for the macro range.

With its compact dimensions and the low weight the 3D scanners show their qualities in both, the stationary and mobile use.



The PT-M 3D scanners are easily adjustable for different measuring areas. Objects with a size of few millimetres up to several meters can be scanned with the same equipment by combining scans from different visual angles.

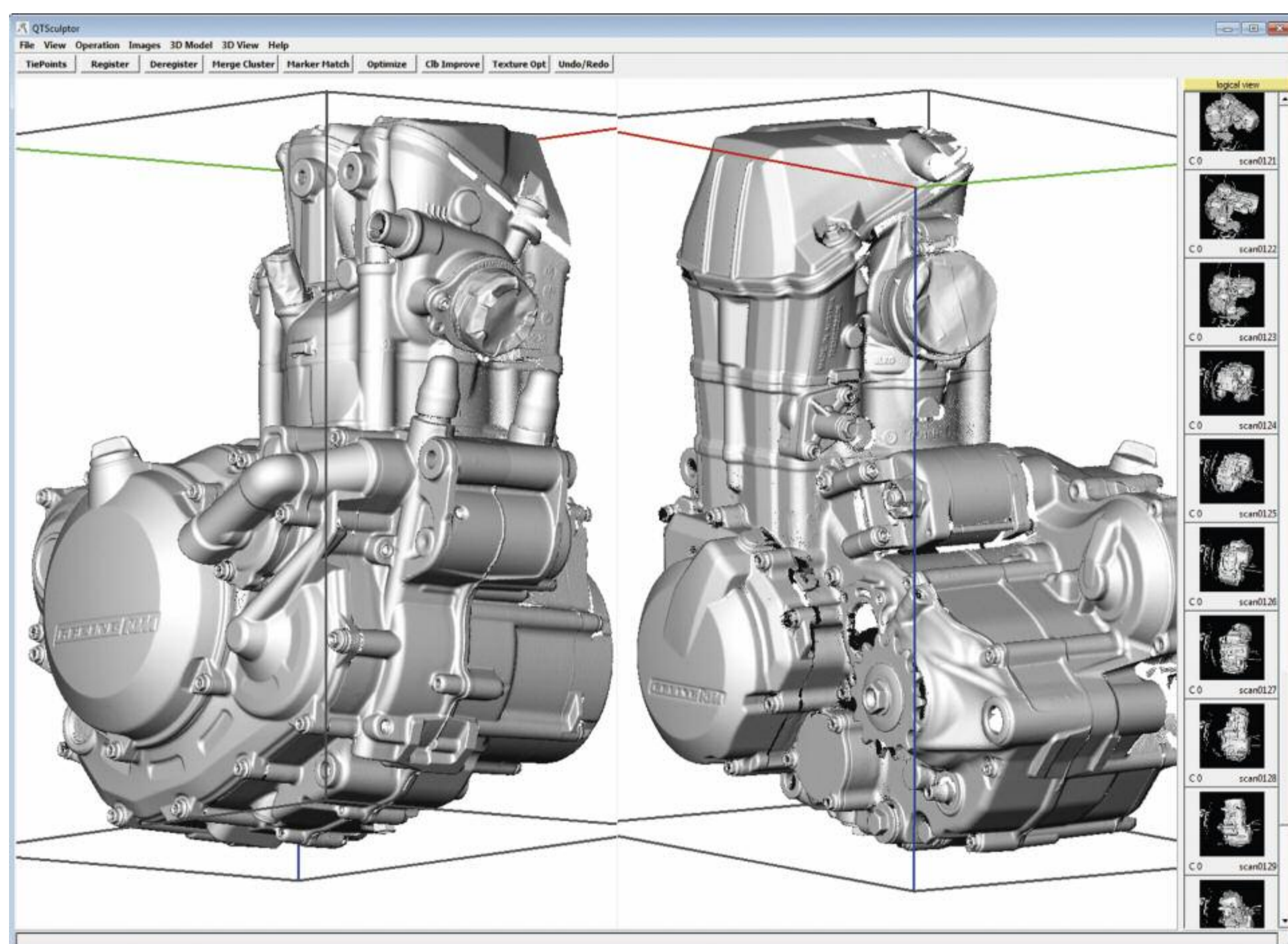


	Measuring Area [mm]			Point Spacing [mm]			Depth Resolution [µm]		
	min	typical	wide	min	typical	wide	min	typical	wide
PT-M4	62 x 62	439 x 439	890 x 890	0.03	- 0.21	- 0.43	6	- 27	- 54
PT-M5	47 x 39	517 x 433	1042 x 873	0.02	- 0.21	- 0.42	4	- 26	- 53

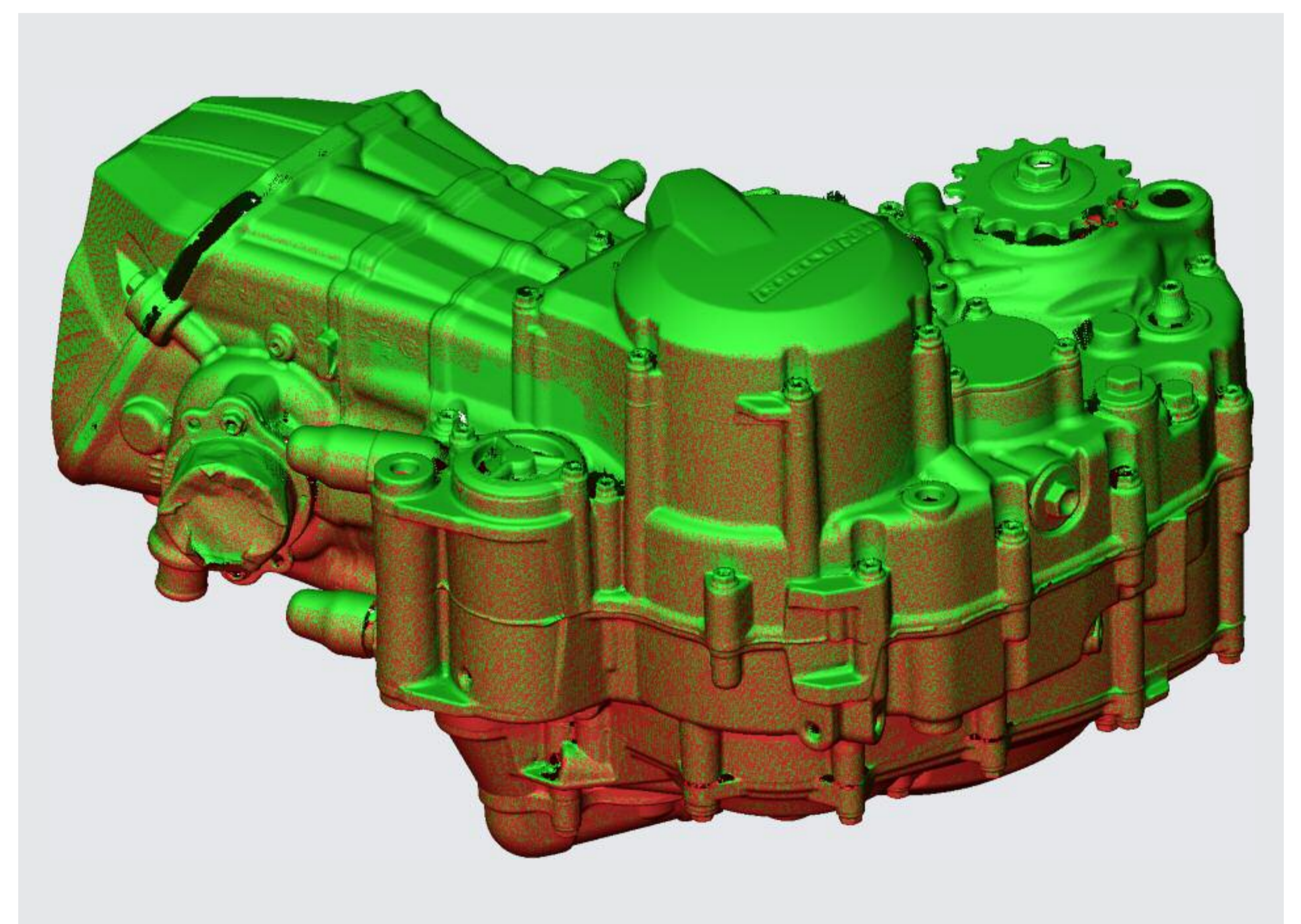
Rotary Device **PT-R200**

Most parts of an objects geometry can be scanned by the push of a button if the program controlled rotary device PT-R is used. The expenditure of time for manually combining single scans can thereby be reduced to a minimum.

The rotary device positions even very heavy parts (<200kg) accurately. The starting position, number and size of acquisition sequence steps, velocity and speed can be adjusted to the character of the object.



Result of two scanning rounds, visualized as pointclouds



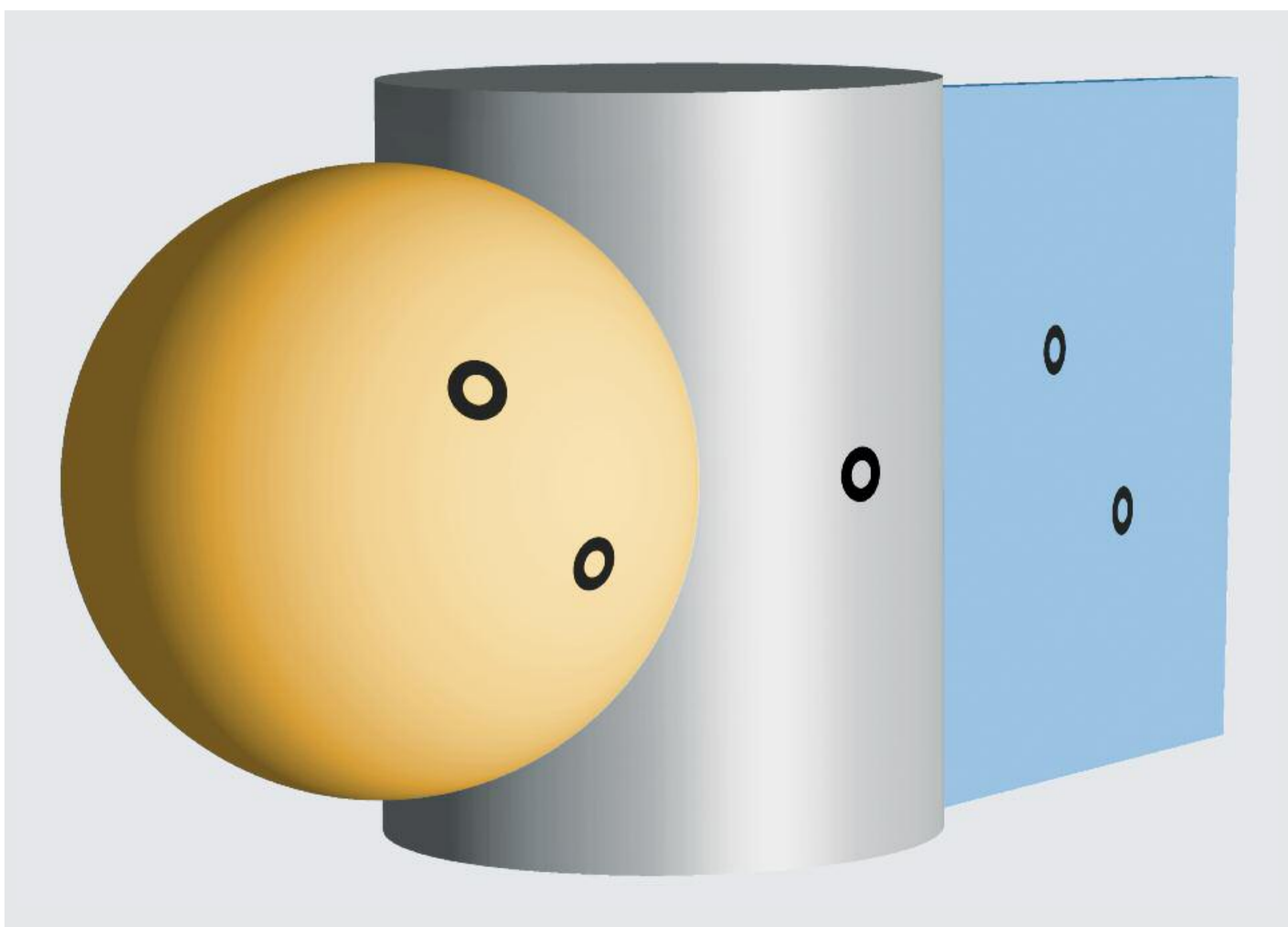
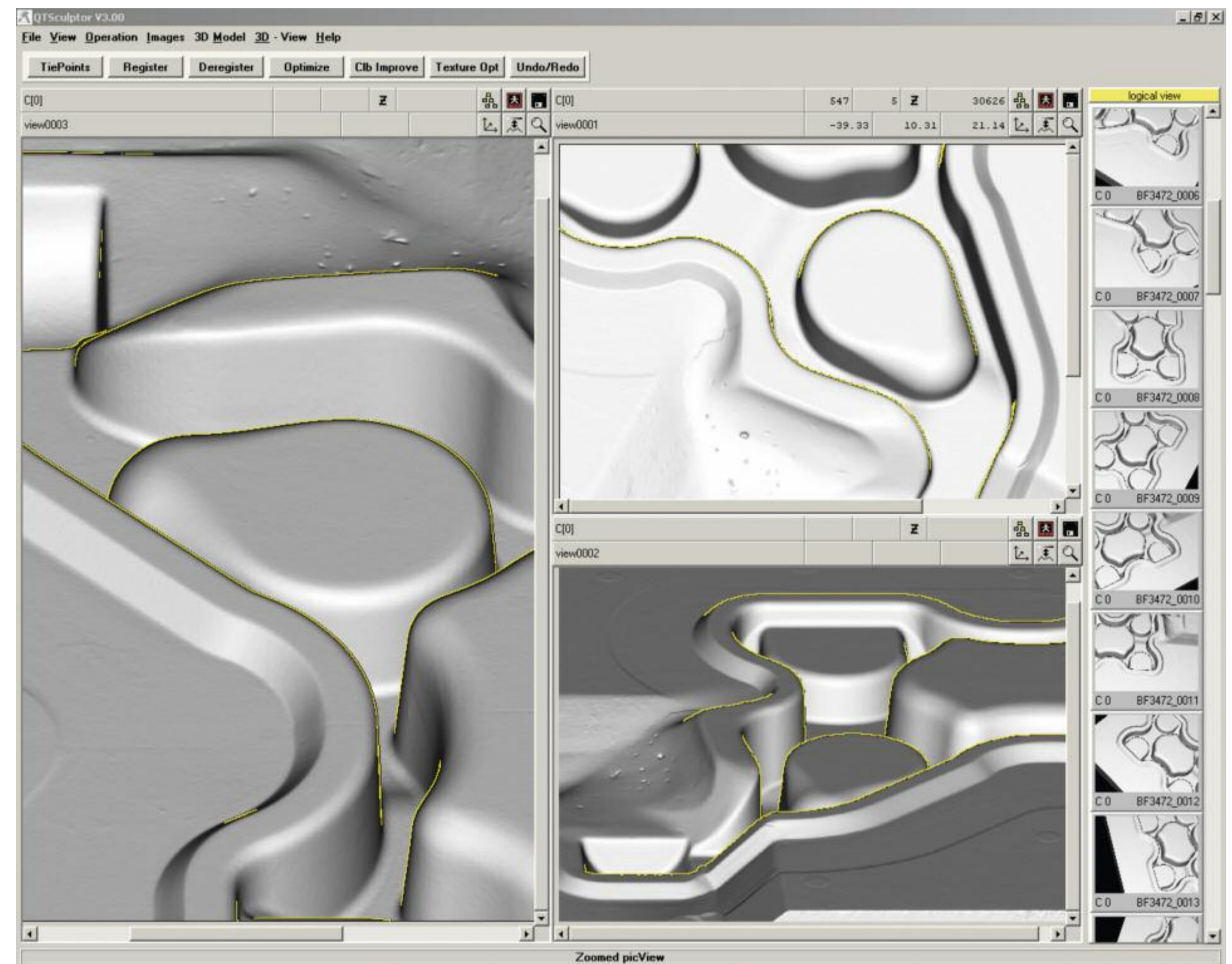
Two scanning rounds, registered to complete the scanned surface



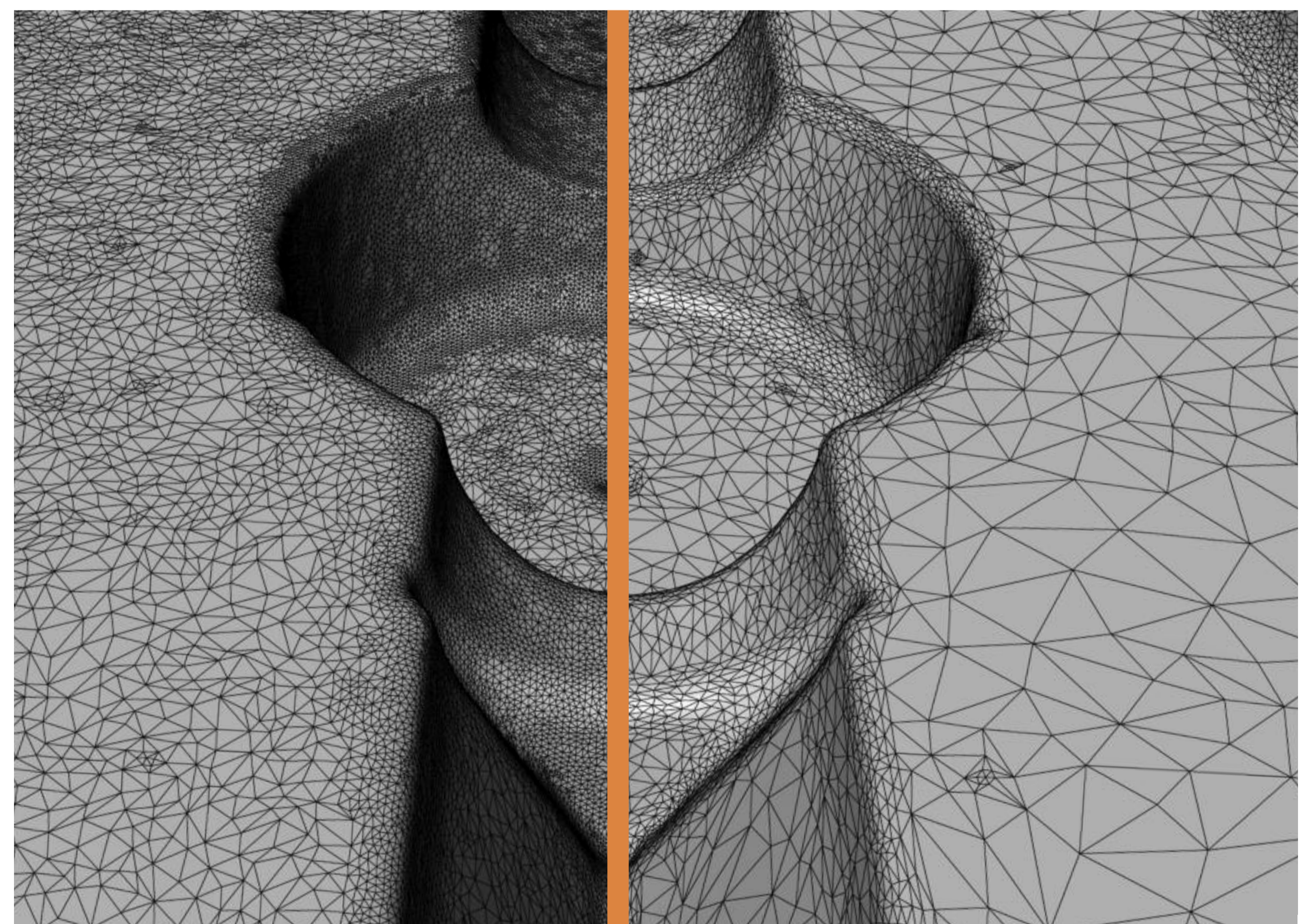
The rotary device PT-R200 has a maximum load capacity of 200kg

QTSculptor Software

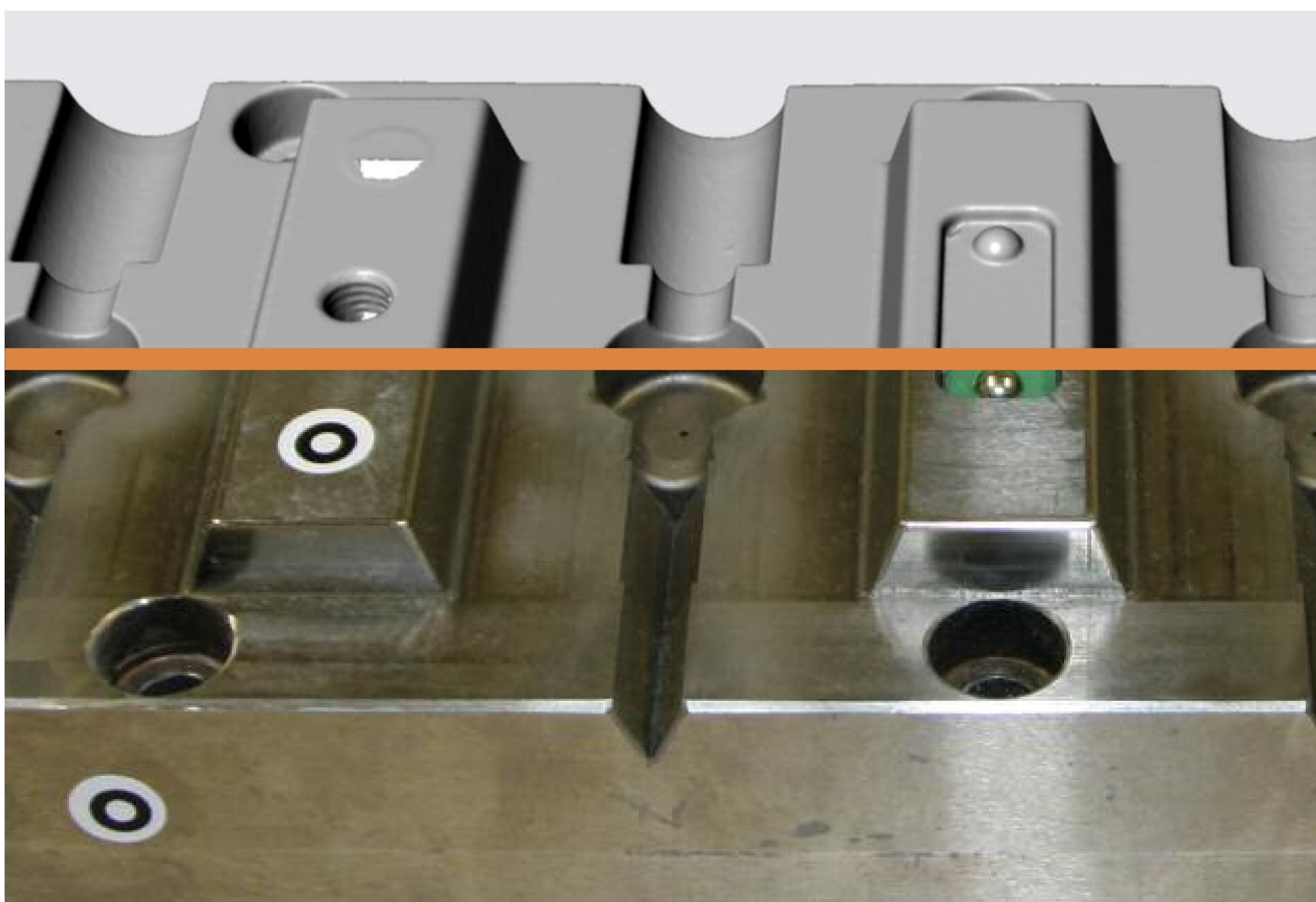
- Controlling and calibration of the sensor head
- Interactive view planning
- Segmentation of range images
- Registration using geometry or markers
- Comfortable handling of large data records
- Exploitation of data redundancies
- Generation of watertight triangular meshes
- Selective editing of meshes
- Adaptive triangular meshing and reduction
- Controlling of linear and rotation axis
- Windows 64-Bit / Multi-Core support
- Computation of RIEGL project data (VZ-400)



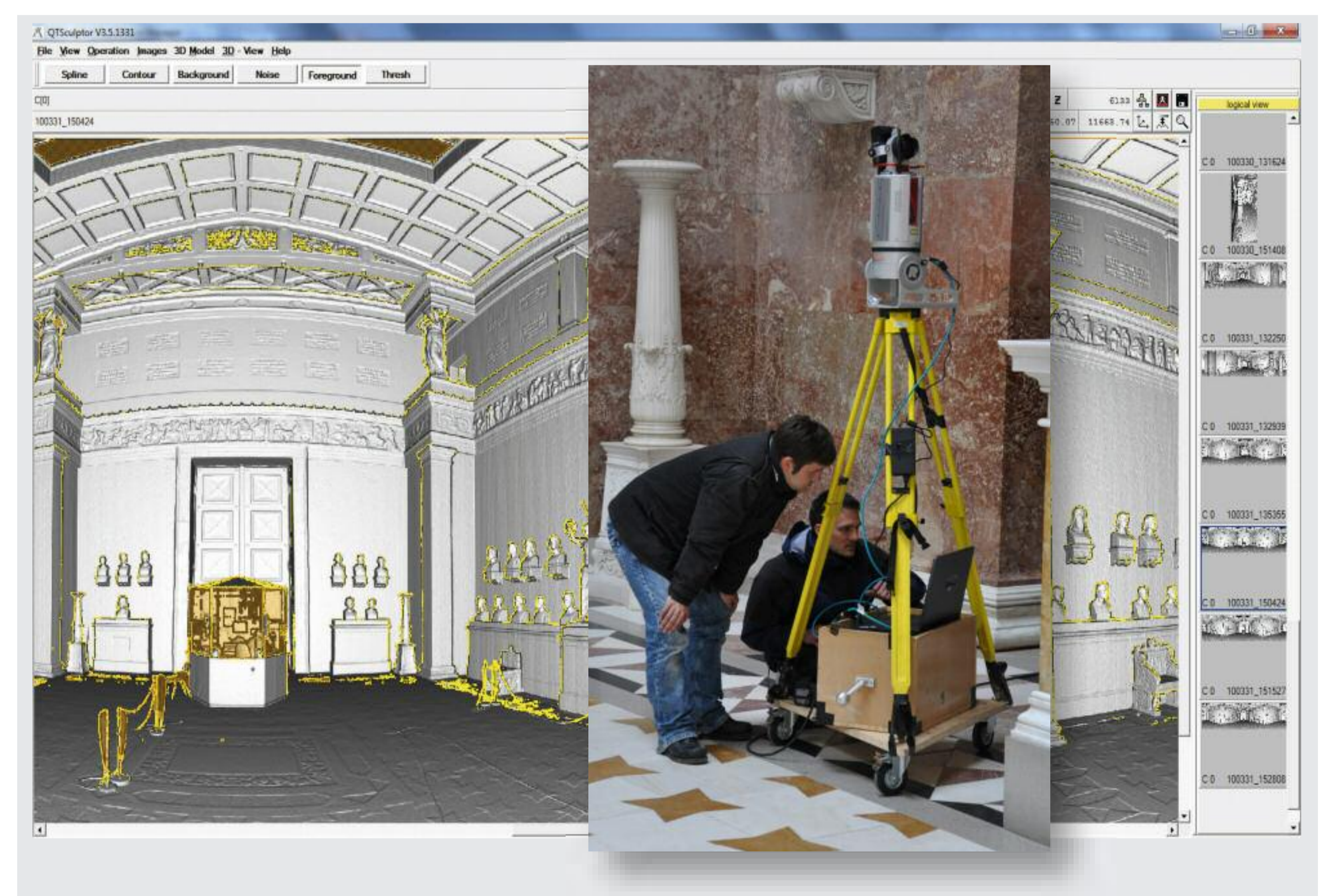
Depending on the geometry a minimum of 1 marker in overlapping scan areas is necessary to enable automatic registration



Reduction of large data sets with minimum loss of detail



Tool form
© Teccluster A/S



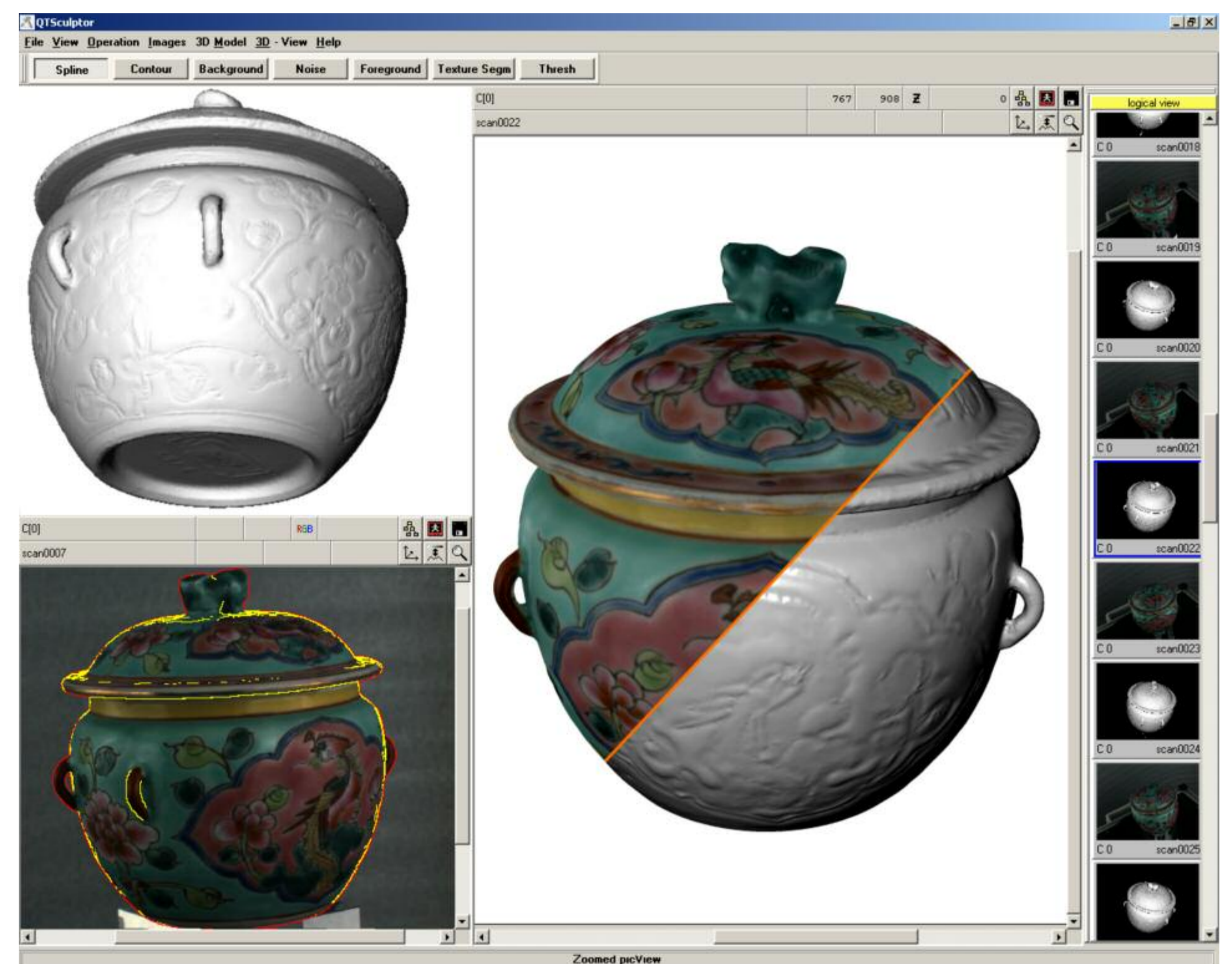
Measuring of the pantheon "Walhalla"
© ArcTron GmbH

QTSculptor Texturing Extension

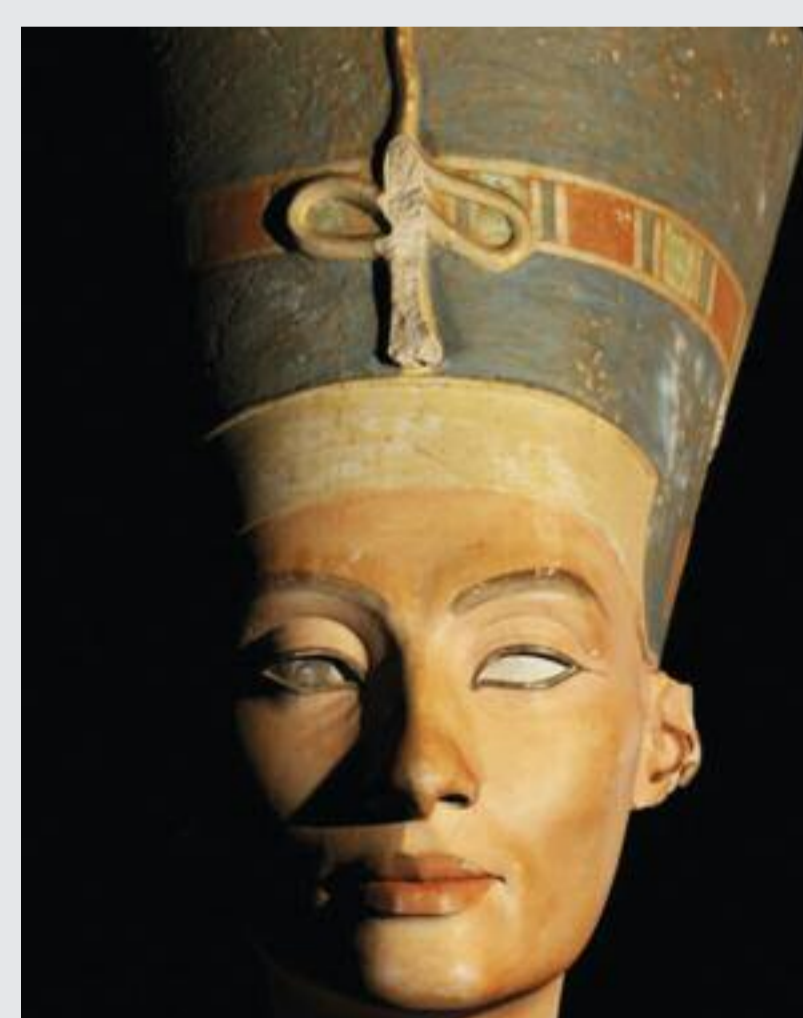
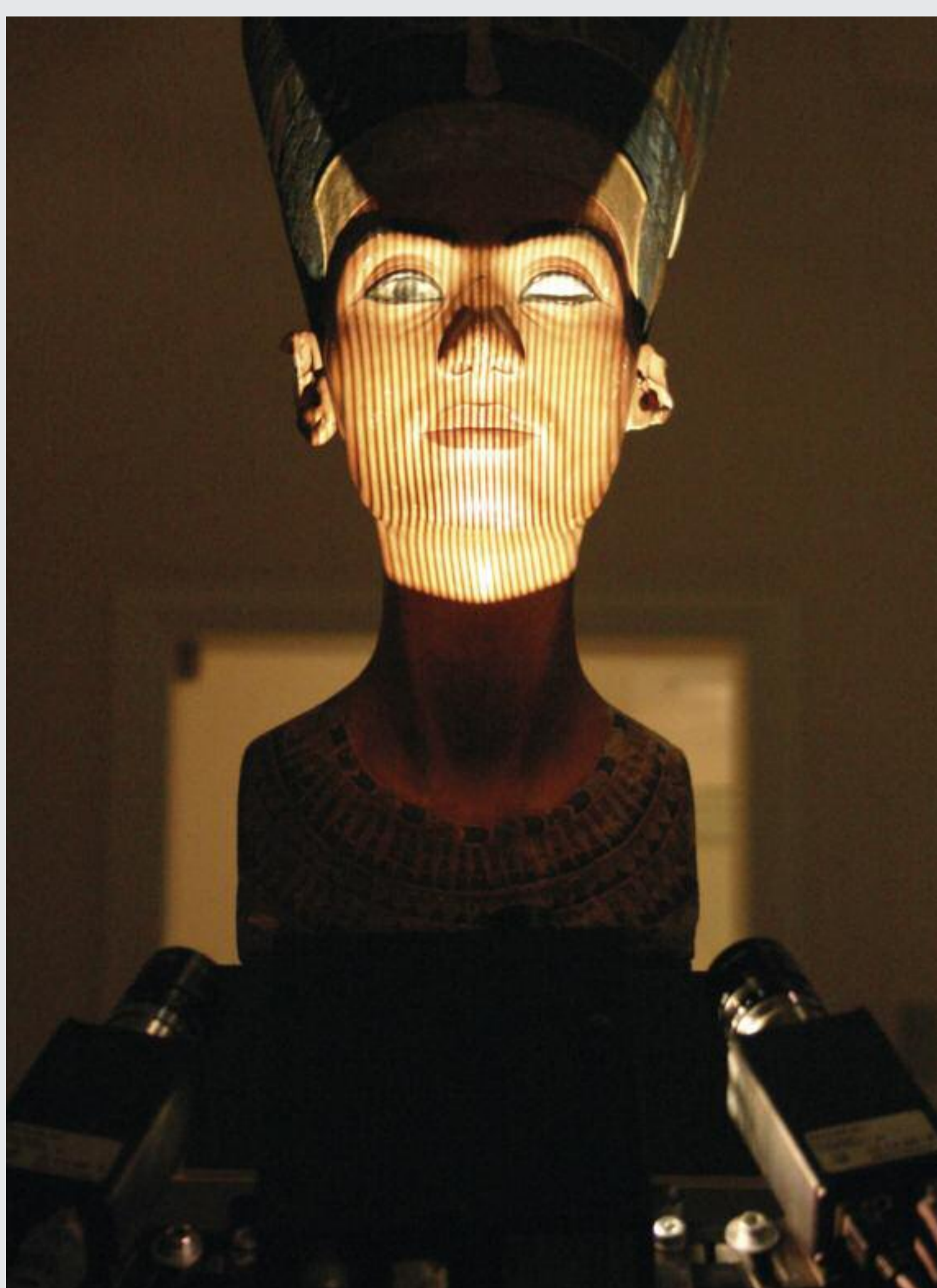
The QTSculptor Texturing Extension completes the 3D acquisition of real world objects. Based on digital photographs as well as the data of our 3D color scanning devices, it processes photo-realistic 3D models.

By integrating an additional color camera, the scanners of the PT-M series can be extended to full 3D color scanning functionality. The result is a naturally colored, photo realistic 3D model by the push of a button. To provide for a homogeneous illumination of the object, QTSculptor supports the controlling of flash lights.

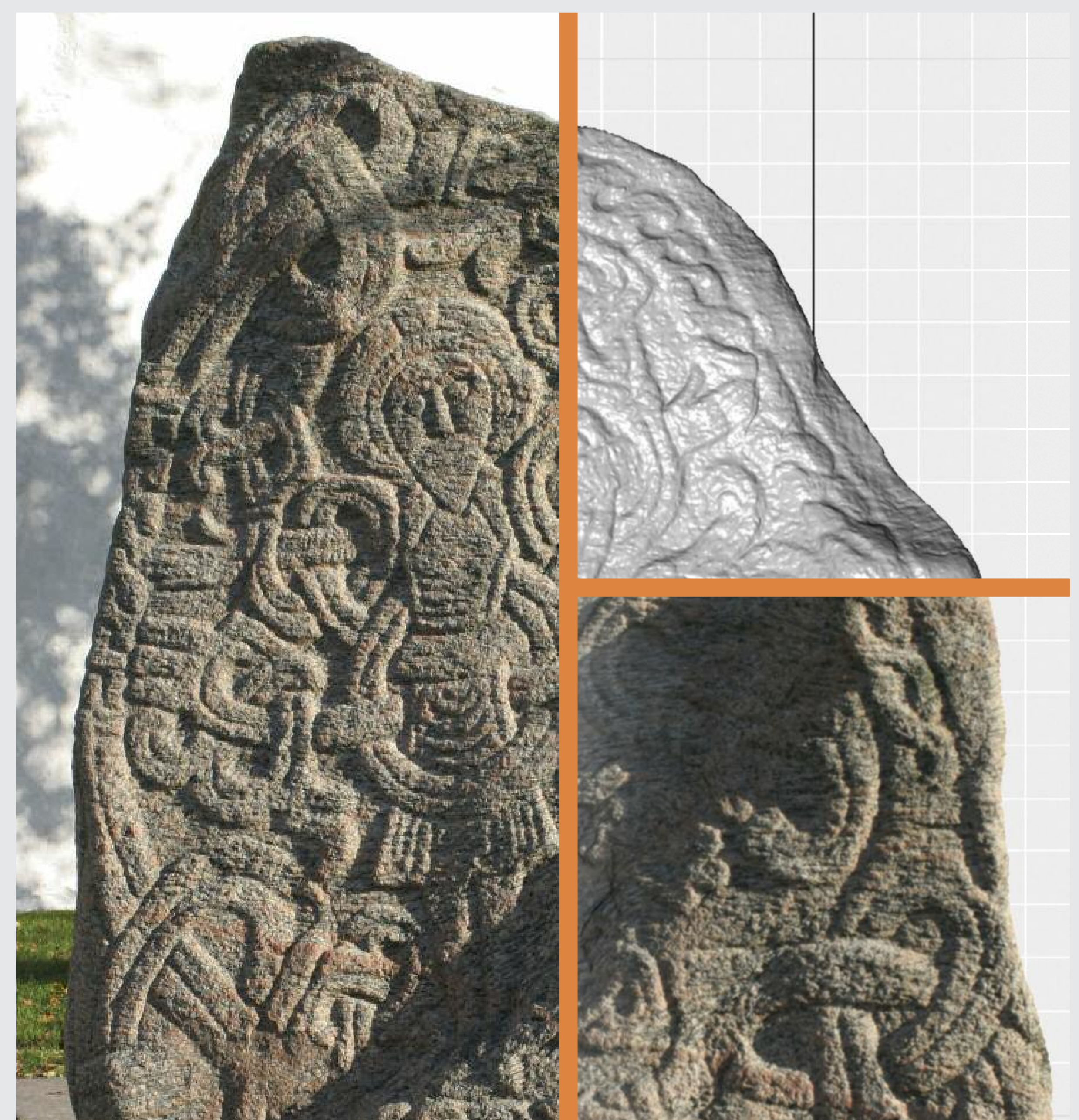
Digital photos from external cameras are registered to an existing geometry with few mouse clicks. The high resolution of current digital cameras allows for a very high level of detail of the textured model.



3D Scanner (color version) with flashlight



Flashlight and external camera



priti®face - the new esthetic dimension for CAD/CAM

With the face scanner priti®mirror and its software priti®imaging (fig. on the right) pridenta® GmbH succeeds in providing reliable data for the design, communication and safety. By using photorealistic 3D data, the 3D virtual patient's face is available 24 hours which gives dentists and dental technicians the opportunity to plan the ideal prosthetic together. This opens up completely new perspectives in counseling, decision-making and implementation. Polymetric developed the basic components for this digital workflow:



priti®mirror

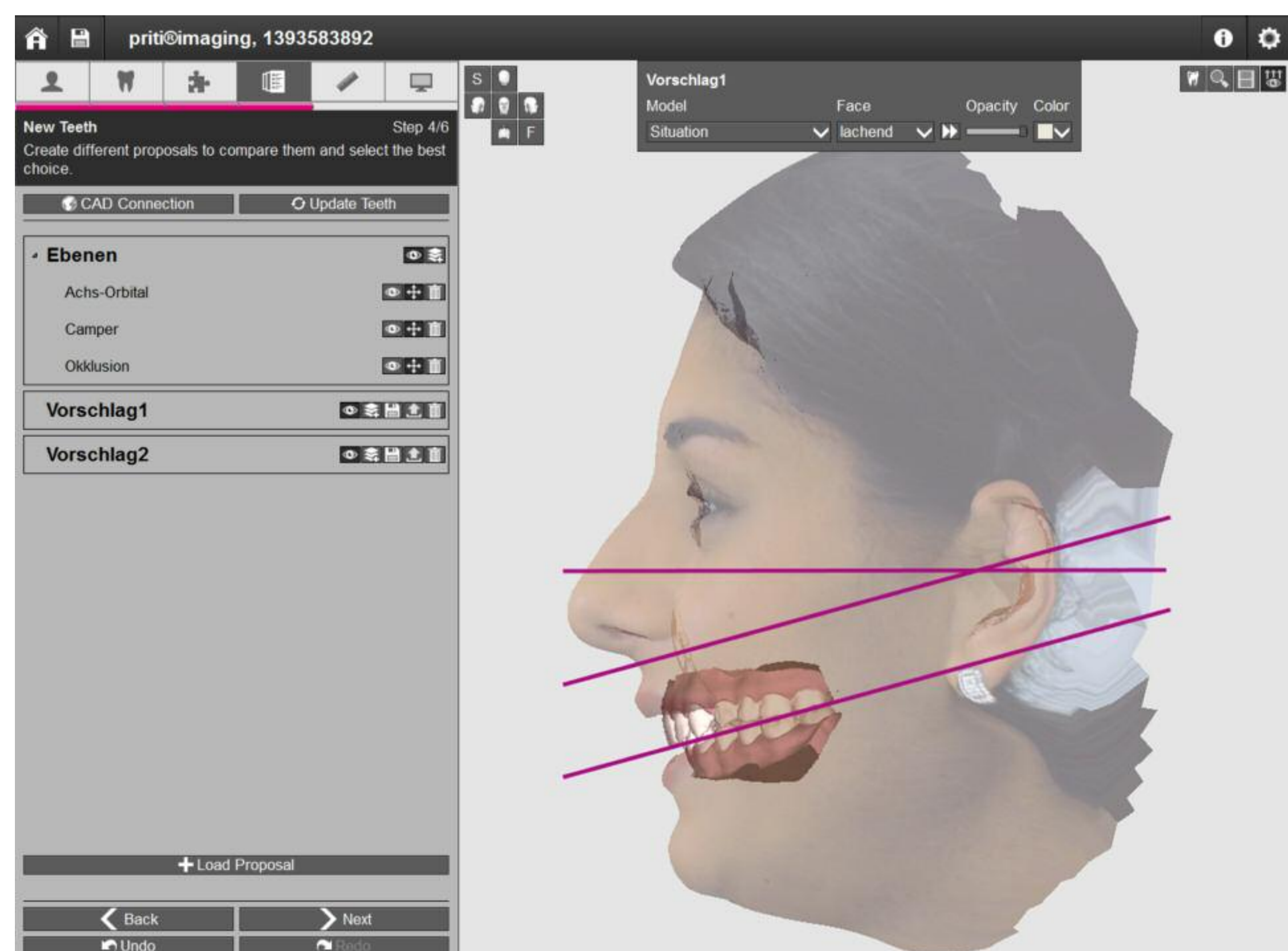
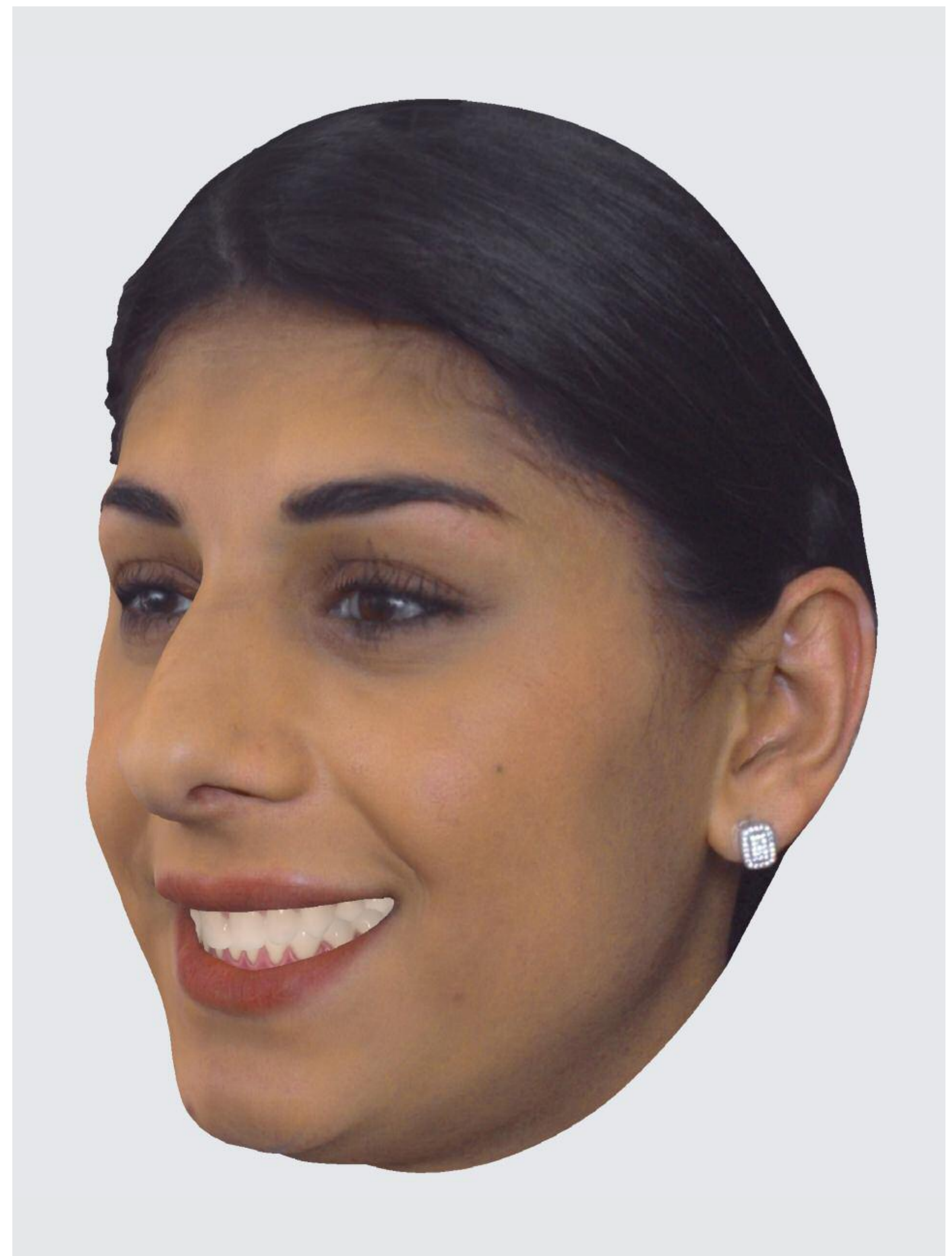
The priti®mirror allows for the photo-realistic 3D acquisition of physiognomy and facial expression of the patient.

priti®imaging

Digital models of the face and the teeth can be connected with priti®imaging . The positioning of the teeth is done directly on the "virtual patient" in order to achieve an optimal esthetic result.



Acquisition of the patients face with priti®mirror



Planning of the dental restoration in priti®imaging

Photo-realistic visualization of the planned result

Zirkonzahn Dental CAD/CAM

S600 ARTI Dental Scanner

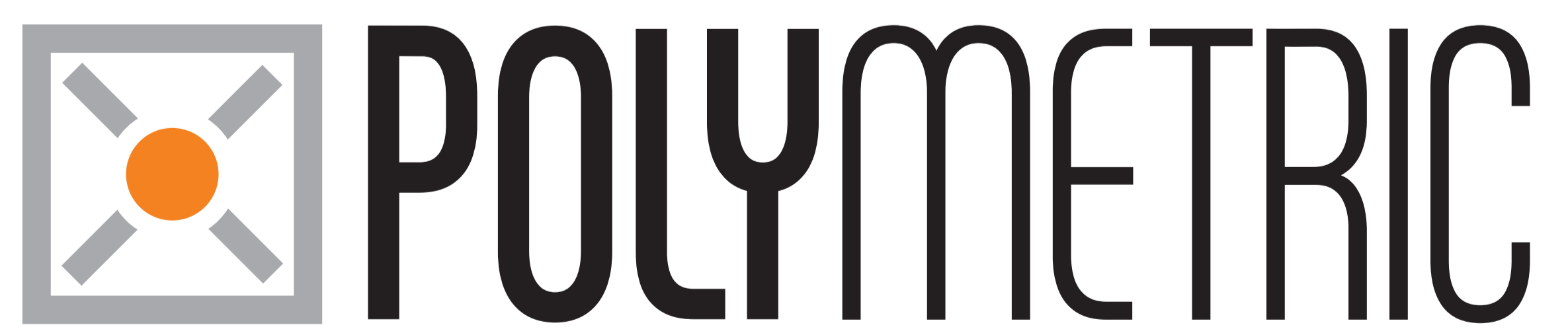
Polymetric GmbH developed a specialized optical scanning device for Zirkonzahn, a dental supplier from South Tyrol. The scanner has two axes for the automated digitization of any dental situation. The S600 does measure the single tooth with exactly the same high accuracy as the whole jaw. A special feature is the ability to scan the upper and lower jaw together in an articulator. This guarantees a perfect fit.

Face Hunter Head Scanner

The design and the handling of the head scanner Face Hunter is perfectly integrated in the Zirkonzahn CAD/CAM system. It provides reliable information on the physiognomy of the patient which can be used in the manufacturing of dental restorations.



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